Chapter 2

Interim Measures and EPA's "Stabilization Initiative"

Note to the Reader

On February 16, 1993, EPA promulgated a portion of the proposed Subpart S rule as a final rule *(see Corrective Action Management Units and Temporary Units; Corrective Action Provisions; Final Rule, 58* FR 8658, Tuesday, February 16, 1993). This final rule sets forth the requirements for establishing corrective action management units (CAMUs) or temporary units during RCRA corrective actions. The specific requirements for CAMUs and temporary units under the final rule differ significantly from the requirements of the proposed rule (see 55 FR 30842-30844, July 27, 1990). Rather than delay publication of this guidance, the DOE Office of Environmental Guidance has chosen not to incorporate these changes into this guidance. Therefore, the discussions of CAMUs and temporary units appearing in this document are based solely on the proposed Subpart S rule. A copy of the final CAMU and temporary unit rule is provided as an appendix to this guidance. A summary of the major provisions of the rule is provided below.

The final rule does not change the most important benefit of establishing a CAMU, namely, remediation wastes (a new class of wastes established in this rule) generated during corrective action can still be disposed of in a CAMU without triggering the land disposal restrictions (LDRs) or minimum technology requirements (MTRs). However, the final rule does make several significant changes in the requirements for CAMUs and temporary units. Briefly, these changes include:

- **CAMUs are no longer limited to contiguous areas of contamination, but are now linked primarily to where remediation wastes are managed; that is, designation of CAMUs is now related to the function and purpose they serve in facilitating management of remediation wastes during cleanup rather than the to the areal extent of contamination.**
- **Establishing a new class of wastes called remediation wastes. Only remediation wastes can be managed in a CAMU or temporary unit.**
- **Permitting disposal of remediation wastes, generated at any location within the boundaries of a facility, in a CAMU.**
- **Creating a set of specific decision factors that must be considered when establishing CAMUs or temporary units.**

Note to the Reader
(continued)

- **Establishing regulations for permits, permit modifications, orders, or order modifications establishing CAMUs or temporary units that include: (1) specific elements that must be included; (2) documentation requirements for the decision; and (3) requirements for public participation in the process.**

- **Establishing requirements for designating regulated units (i.e., land-based units such as landfills, surface impoundments, or waste piles) as CAMUs.**

- **Setting out requirements for closure of CAMUs.**

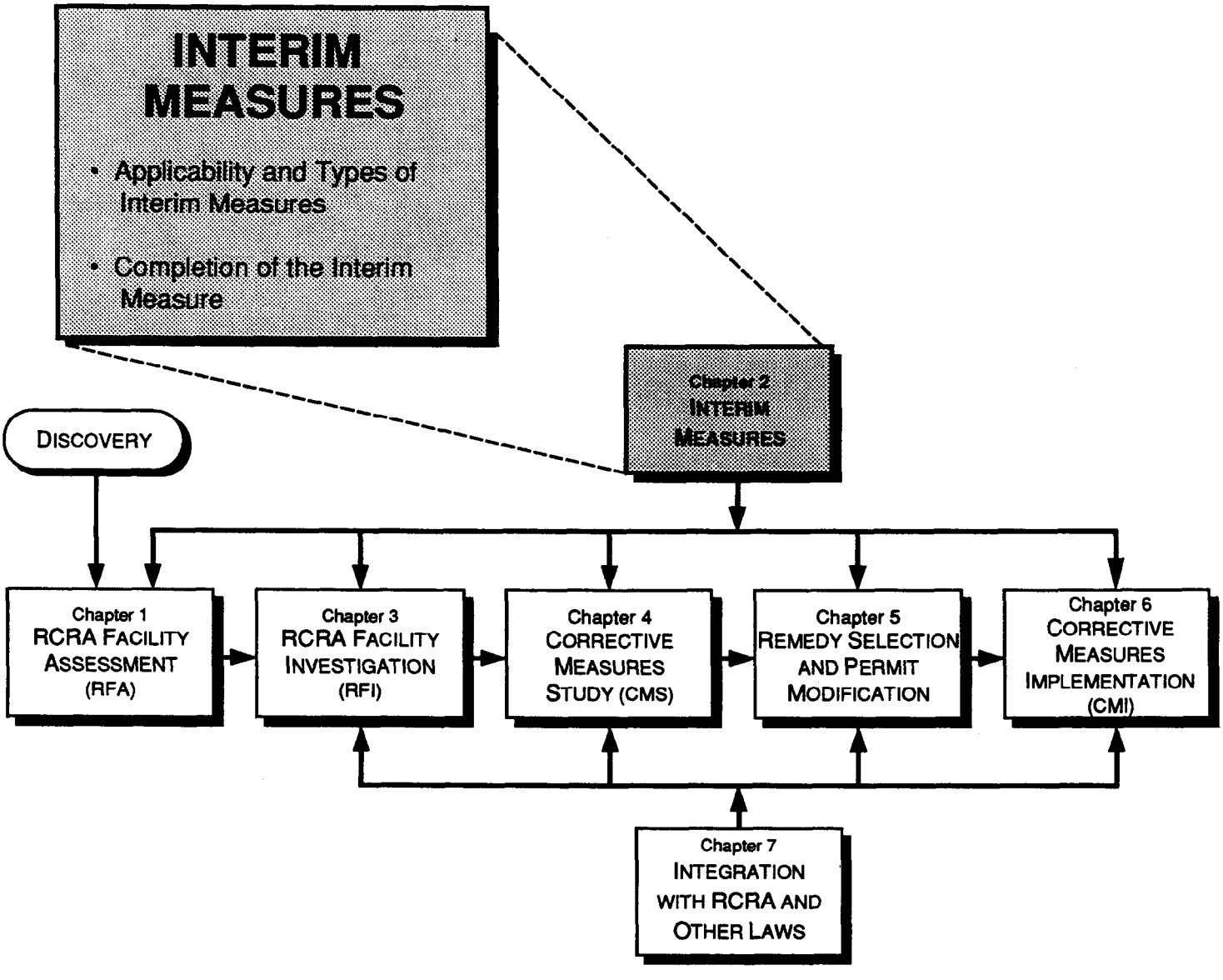
- **Limiting the designation of temporary units to tanks and container storage units.**

- **Increasing the permissible life of a temporary unit from 180 days to 1 year.**

- **Establishing specific requirements for granting extensions to the operational time limit placed on temporary units.**

- **Providing specific details on how the CAMU and temporary unit final rule will be implemented in States that are: (1) not authorized for the base RCRA program; (2) authorized for the RCRA base program, but not for corrective action; and (3) authorized for corrective action.**

RCRA Subpart S Corrective Action Process



Introduction

Section 264.540 of proposed Subpart S rule allows the EPA Regional Administrator (or the authorized State) to require interim measures at any time during the corrective action process. EPA has had the authority to order action since the 1984 HSWA amendments were enacted. Interim measures can be required even though Subpart S is not a final rule.

In the preamble to the proposed Subpart S rule, EPA makes a distinction between the applicability of Subpart S to "one-time spills" and releases from solid waste management units (SWMUs). In this discussion, EPA states that contamination resulting from a "one-time spill" (such as an overturned truck) will not be considered a SWMU for purposes of corrective action. However, EPA apparently will require interim measures (and other corrective action activities) if a one-time spill occurs at any location which could be considered a SWMU. The key to the distinction appears to be the relationship of the release to a definable unit. Facilities should clearly identify any "one-time spills" that are not associated with a definable unit to EPA during the RFA (see 55 FR 30809).

Interim measures under RCRA can be compared to "removals" under CERCLA. The primary differences between the RCRA program and the CERCLA program are that: (1) under RCRA, there is an active owner/operator maintaining control over the facility, whereas CERCLA removals are usually conducted at abandoned sites where there is no active owner or operator; and (2) CERCLA authority is broader in scope than RCRA authority. The two programs are similar in that both are used at sites where immediate action to minimize the hazard posed by the site is required. In the case of RCRA interim measures, these actions would occur in a timeframe shorter than that which could be expected if the normal corrective action process were allowed to progress. Using interim measures to achieve near- to midterm results at corrective action sites is the goal of EPA's "stabilization initiative."

Under the "stabilization initiative," interim measures would be used to address the worst releases at a facility first, in an effort to control or abate threats to human health or the environment and to prevent or minimize the further spread of contamination while a long-term solution is developed and implemented. These "stabilization" activities can be implemented by the facility either at the direction of the EPA Regional Administrator or on a voluntary basis. If a facility elects to conduct a voluntary "stabilization" action, it must be recognized that while EPA may provide minimal oversight of a voluntary action, these voluntary actions do not release the facility from RCRA liability, and EPA retains the right to require any additional activities deemed necessary by the EPA Regional Administrator.

Many waste management units at DOE facilities that are defined as SWMUs under RCRA are also being addressed through CERCLA authorities, primarily as National Priorities List (NPL) sites. CERCLA authorities have been applicable to DOE facilities since the early 1980s. Although these same facilities are subject to corrective action under RCRA authorities, and to interim measures if deemed appropriate, many removal actions have already occurred at these units. Usually an FFCA is developed to specify which authority,

RCRA or CERCLA, is to be applied at a given unit, and to ensure that all compliance requirements are clearly defined.

Interim measures can be classified as emergency and non-emergency actions. In the first case, interim measures could be deemed immediately necessary, with after-the-fact notification of regulatory authorities. While such emergency actions should be taken in concert with a facility's RCRA contingency plan, and exclusive of RCRA Corrective Action authorities, it is nevertheless possible that interim measures could be applied on an emergency basis. For the latter case, interim measures would be prescribed by EPA (or under State authority) through the RCRA permit, a RCRA §3008(h) corrective action order, or an order under RCRA §7003 or under a Federal Facility Compliance Agreement (FFCA)[3]. In such cases, the EPA Regional Administrator would order the action to be conducted immediately, and a permit modification or order would be issued later, providing DOE only limited, after-the-fact opportunity to negotiate applicable requirements.

When a release of hazardous waste or hazardous waste constituents from a SWMU is discovered, an interim measure may be deemed necessary based on the following considerations:

- Actual or potential exposure of nearby human populations or environmental populations to hazardous wastes or constituents;
- Actual or potential contamination of drinking water supplies or sensitive ecosystems;
- Presence of hazardous wastes or constituents in drums, barrels, tanks, or other bulk storage containers that may pose a threat of release;
- Presence of high concentrations of hazardous wastes or constituents in soils at or near the surface that may migrate readily to receptors, or to which the public may be inadvertently or unknowingly exposed;
- Weather conditions that may cause the release or migration of hazardous wastes or constituents;
- Threat of fire or explosion; or
- Other actual or imminent threats to human health or the environment.

The requirement for an interim measure is partly dependent on how imminent the threat is in combination with how soon the Corrective Measures Implementation (CMI) phase, a result of the normal RCRA Corrective Action process (i.e., RFA, RFI, CMS, CMI), will occur. Frequent informal communication between the DOE facility and the regulatory

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[3] The term "Federal Facility Compliance Agreement (FFCA)" used in this document includes all forms of agreements between agencies, unless the use of a more specific term (such as a CERCLA §120(e)(2) Interagency Agreement) is necessary.

agency can facilitate the integration of the interim measures process with the long-term corrective action process.

If a threat exists, in keeping with EPA's "stabilization initiative," interim measures should be considered and, if appropriate, performed by the facility within the period before implementation of the corrective measure. Interim measures can stop a problem before it occurs or gets worse, but should not, to the extent possible, interfere with the corrective measure likely to be selected for that SWMU. As an example, if drums are releasing waste or constituents and that release is contaminating an area of soil, the drums could be overpacked or moved to a location where the leakage will be contained. Preventing migration of contaminants from the contaminated soil by capping the area with concrete, however, may interfere with the possible future corrective measure of removing (and subsequently treating or disposing of) underlying soil. In all cases, proposed interim measures should be evaluated to ensure that they will not interfere with possible future corrective measures that may be applied.

The need for an interim measure can be identified by the authorized regulatory agency or DOE. It is likely, however, that whoever is performing the RFA will make that discovery. EPA (or the State) can, and in some cases is likely to, delegate the responsibility for performing the RFA to DOE, which would then have the responsibility to initiate the interim measures process. Examples of interim measures are shown in Table 2-1. It should be noted that the need for interim measures can be identified during the RFI, CMS, or even CMI.

If an interim measure will be performed under non-emergency conditions, a work plan will generally be developed in accordance with permit or 3008(h) Order conditions. The work plan will contain objectives, a detailed discussion of the specific activities to be conducted, a health and safety plan, a data collection quality assurance plan (DCQAP) (if required), and, if appropriate, a public involvement plan (PIP). Depending on the complexity of the interim measure, the work plan may also contain an investigations program, design program, and construction quality assurance plan. At each step along the way, from work plan submittal through implementation, the regulatory agency will receive progress reports from the facility. Informal communication is expected and anticipated because of the interactive character of the interim measures process and corrective action in general.

TABLE 2-1
EXAMPLES OF INTERIM MEASURES**

Soils ● Sampling/Analysis/Disposal ● Run-off/Run-on Control (Diversion or Collection Devices) ● Temporary Cap/Cover	**Containers** ● Overpack/Redrum ● Construct Storage Area/Move to Storage Area ● Segregation ● Sampling and Analysis ● Treatment, Storage and/or Disposal ● Temporary Cover
Groundwater ● Delineation/Verification of Gross Contamination ● Sampling and Analysis ● Interceptor Trench/Sump/Subsurface Drain ● Pump and Treat ● In-situ Treatment ● Temporary Cap/Cover	**Tanks** ● Overflow/Secondary Containment ● Leak Detection/Repair/Partial or Complete Removal
Surface Water Release (Point and Non-Point) ● Overflow/Underflow Dams ● Filter Fences ● Run-off/Run-on Control (Diversion or Collection Devices) ● Regrading/Revegetation ● Sample and Analyze Surface Waters and Sediments or Point Source Discharges	**Surface Impoundments** ● Reduce Head ● Remove Free Liquids and or Highly Mobile Wastes ● Stabilize/Repair Side Walls, Dikes or Liner(s) ● Provide Temporary Cover ● Run-off/Run-on Control (Diversion of Collection Devices) ● Sample and Analysis to Document the Concentration of Constituents Left in Place When a Surface Impoundment Handling Characteristic Wastes Is Clean Closed ● Interim Groundwater Measures (See Groundwater Section)
Gas Migration Control ● Barriers, Collection, Treatment, or Monitoring ● Evacuation (Buildings)	**Landfills** ● Run-off/Run-on Control (Diversion or Collection Devices) ● Reduce Head on Liner and/or in Leachate Collection System ● Inspect Leachate Collection/Removal System or French Drain ● Repair Leachate Collection/Removal System or French Drain ● Temporary Cap ● Waste Removal (See Soils Section) ● Interim Groundwater Measures (See Groundwater Section)

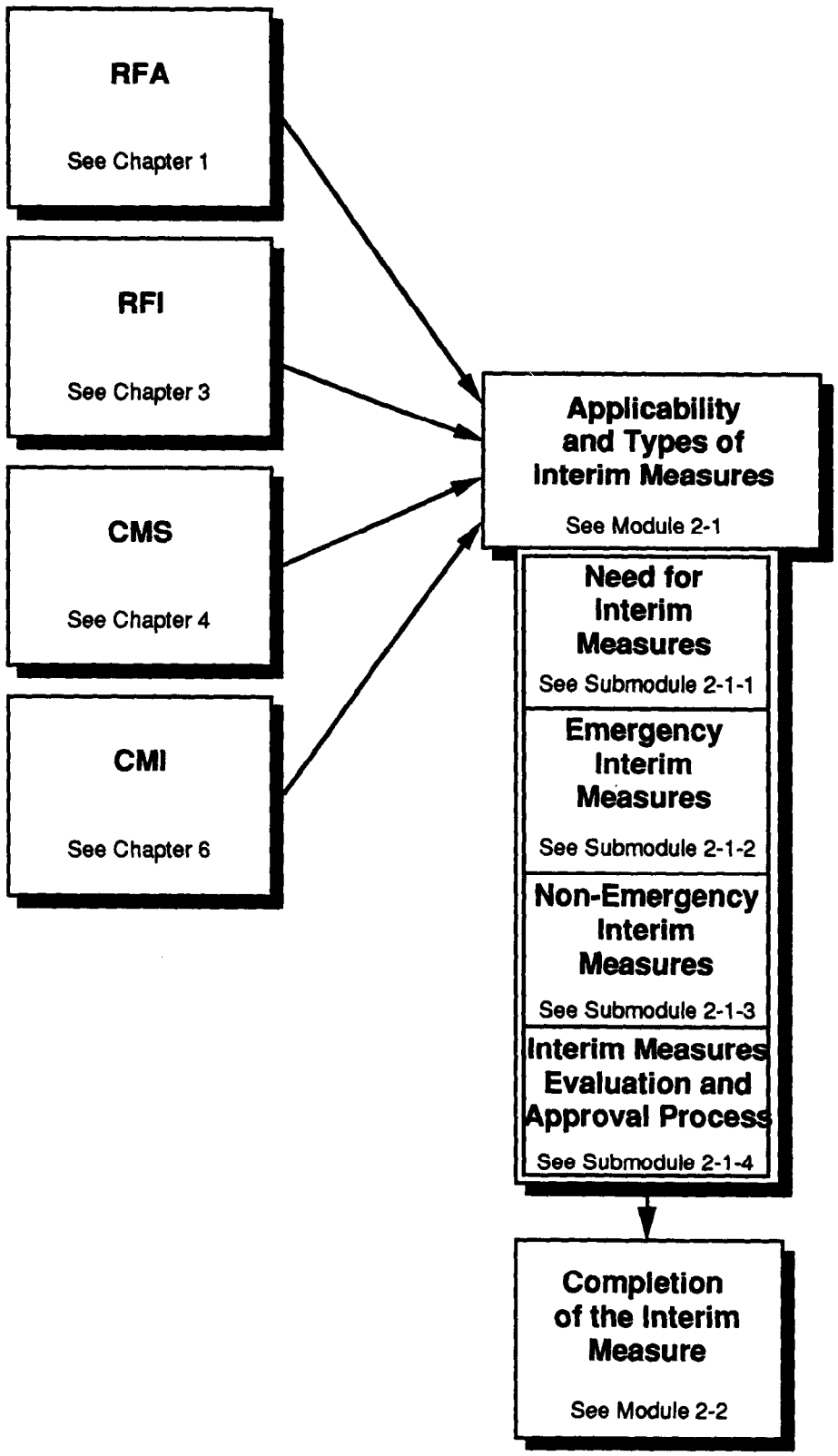
TABLE 2-1 (continued)
EXAMPLES OF INTERIM MEASURES**

Particulate Emissions ● Truck Wash (Decontamination Unit) ● Revegetation ● Application of Dust Suppressant	**Waste Piles** ● Run-off/Run-on Control (Diversion to Collection Devices) ● Temporary Cover ● Waste Removal (See Soils Section) ● Interim Groundwater Measures (See Groundwater Section)
Other Types of Actions ● Fencing to Prevent Direct Contact ● Extend Contamination Studies to Off-site Areas if Permission Is Obtained as Required Under Section §3004(v) ● Alternate Water Supply to Replace Contaminated Drinking Water ● Temporary Relocation of Exposed Population ● Temporary or Permanent Injunction ● Suspend or Revoke Authorization to Operate Under Interim Status	

** From the RCRA Facility Investigation Guidance

Completion of the interim measure is documented as part of the larger corrective action process. In some cases the completion of the interim measure implementation may coincide with the initiation of the corrective measures implementation (following the Corrective Measures Study (CMS)). The interim measure that is applied could later be incorporated into the corrective measure selected as a result of the CMS. If this case can be foreseen, it may be appropriate to recategorize the interim measure as a corrective measure, and incorporate it into the corrective measures implementation. This last case would typically apply only to a non-emergency interim measure. A non-emergency interim measure could also be elected for early implementation if funds are available. Early implementation may also be desired if public perception of the facility would be improved.

The interim measure process is further illustrated in the following overview graphic diagram and in the modules found on the pages following.


RFA
See Chapter 1
RFI
See Chapter 3
CMS
See Chapter 4
CMI
See Chapter 6
Applicability and Types of Interim Measures
See Module 2-1
Need for Interim Measures
See Submodule 2-1-1
Emergency Interim Measures
See Submodule 2-1-2
Non-Emergency Interim Measures
See Submodule 2-1-3
Interim Measures Evaluation and Approval Process
See Submodule 2-1-4
Completion of the Interim Measure
See Module 2-2

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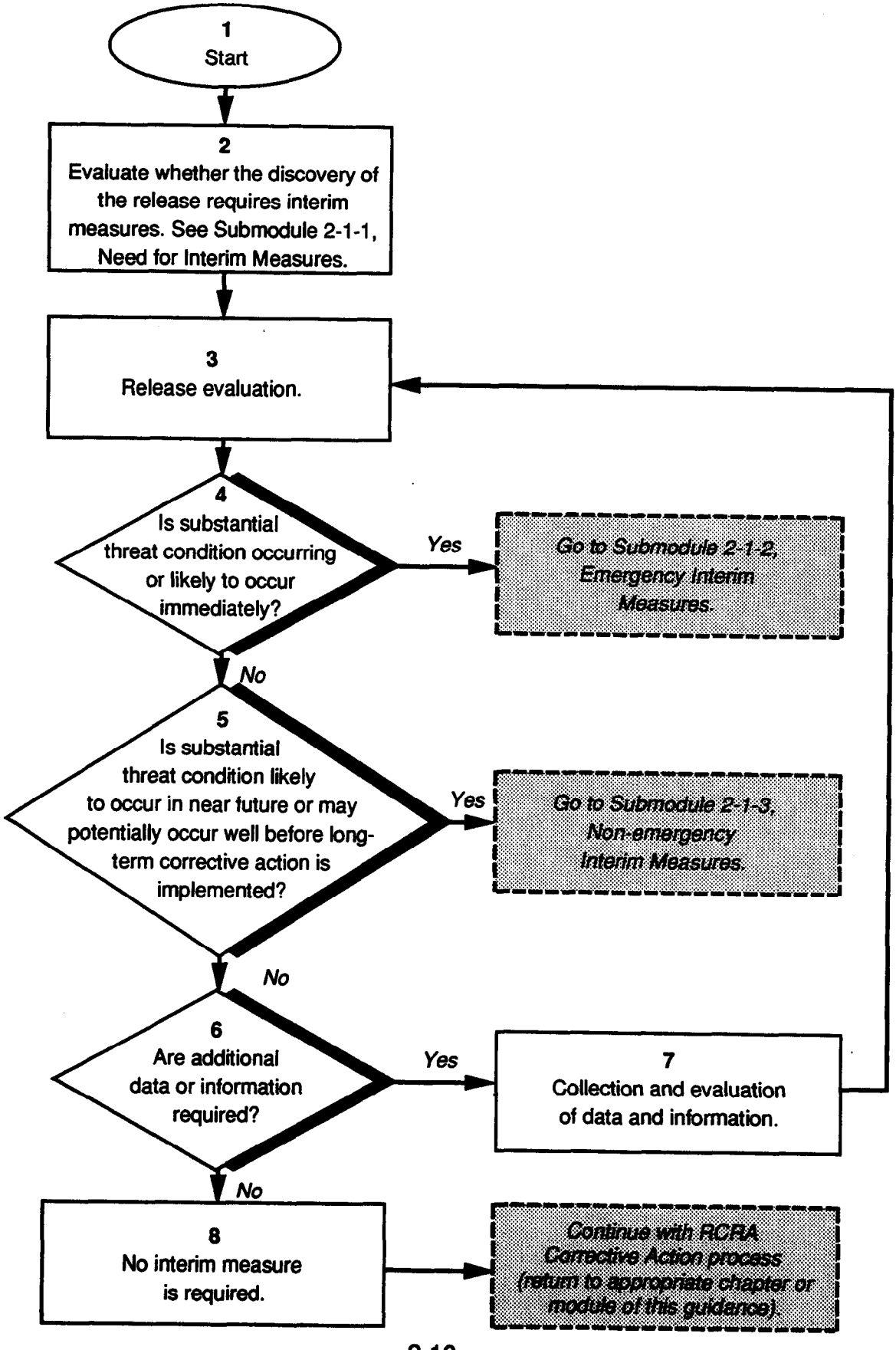
Module 2-1: Applicability and Types of Interim Measures



Module 2-1: Applicability and Types of Interim Measures

Step 1 **Start.**

Step 2 Discovery of a potential release or situation at a SWMU that may require interim measures is most likely to occur during the RCRA Facility Assessment (RFA), though it may occur at any time before or during the corrective action process. During the RFA, and particularly the visual site inspection (VSI), the authorized regulatory agency (or DOE, if authorized through an FFCA), will walk over the site to identify SWMUs and AOCs. The need for interim measures is often identified through this process although it can be identified at any time (see Submodule 2-1-1 for additional information).

Step 3 A release evaluation involves determining which type of interim measure may be appropriate. The evaluation includes determining whether or not there is actual or potential for endangerment to human health or the environment as a result of a potential or actual release. In other cases, a release, as such, may not be involved. An emergency condition such as a high potential for fire or explosion may exist, in which case the interim measure applied would be designed to prevent a release from occurring.

Step 4 If exposure is occurring (or suspected to be occurring), and the threat is immediate or there is a high potential for release, then emergency interim measures are appropriate.

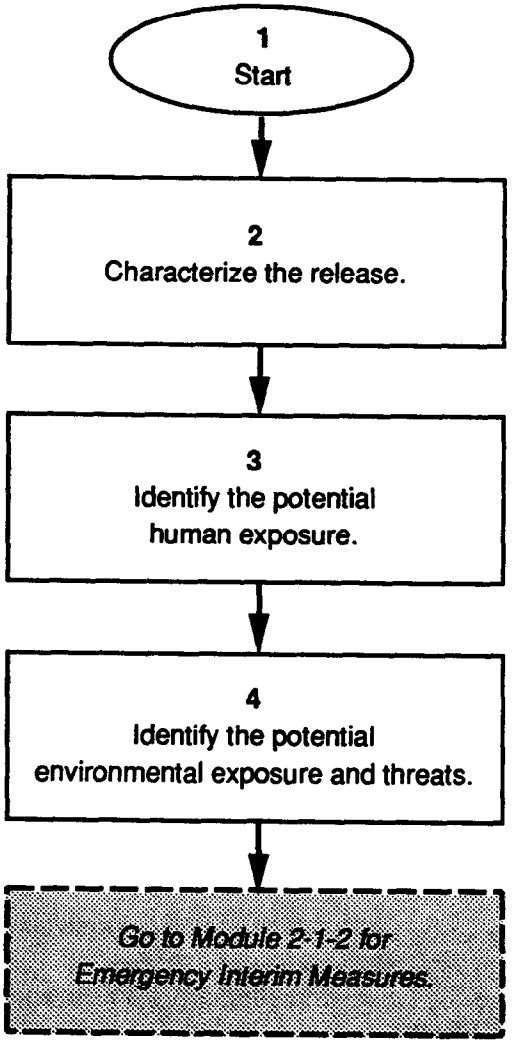
Step 5 If the threat is not immediate, but nevertheless substantial, then a non-emergency interim measure is appropriate. This type of interim measure would be appropriate in situations where action is needed to reduce exposure, the threat of exposure, or further contaminant migration, within a timeframe well before the RFI or CMS.

Step 6 If a determination cannot be made at this time on the need for interim measures or the type of interim measure to be applied, then more information is needed.

Step 7 Environmental sampling, along with other closer examination of the unit and/or available data, can provide enough information to reevaluate the release and/or potential receptors to determine whether interim measures are appropriate, and if applicable, the type of interim measure.

Step 8 Interim measures may not be appropriate if enough information has been collected to determine that the release or potential release will not pose a threat to human health or the environment before long-term corrective action may be implemented.

Submodule 2-1-1: Need for Interim Measures



Submodule 2-1-1: Need for Interim Measures

EPA or the facility must assess the need for an interim measure. Several considerations, such as actual or potential exposure or the threat posed by a release, will be assessed and form the basis for justifying any interim measure. (40 CFR §264.540(b))

Step 1 Start.

Step 2

The release needs to be characterized and several factors need to be considered, including:

- The nature of the source (e.g., amount, or location);
- The hazardous waste constituents at the source;
- The known pathways through which the contamination is migrating or may migrate;
- The extent of the contamination; and
- The projected fate and transport of the contaminants.

Step 3

Evaluate the potential for human exposure based on such considerations as:

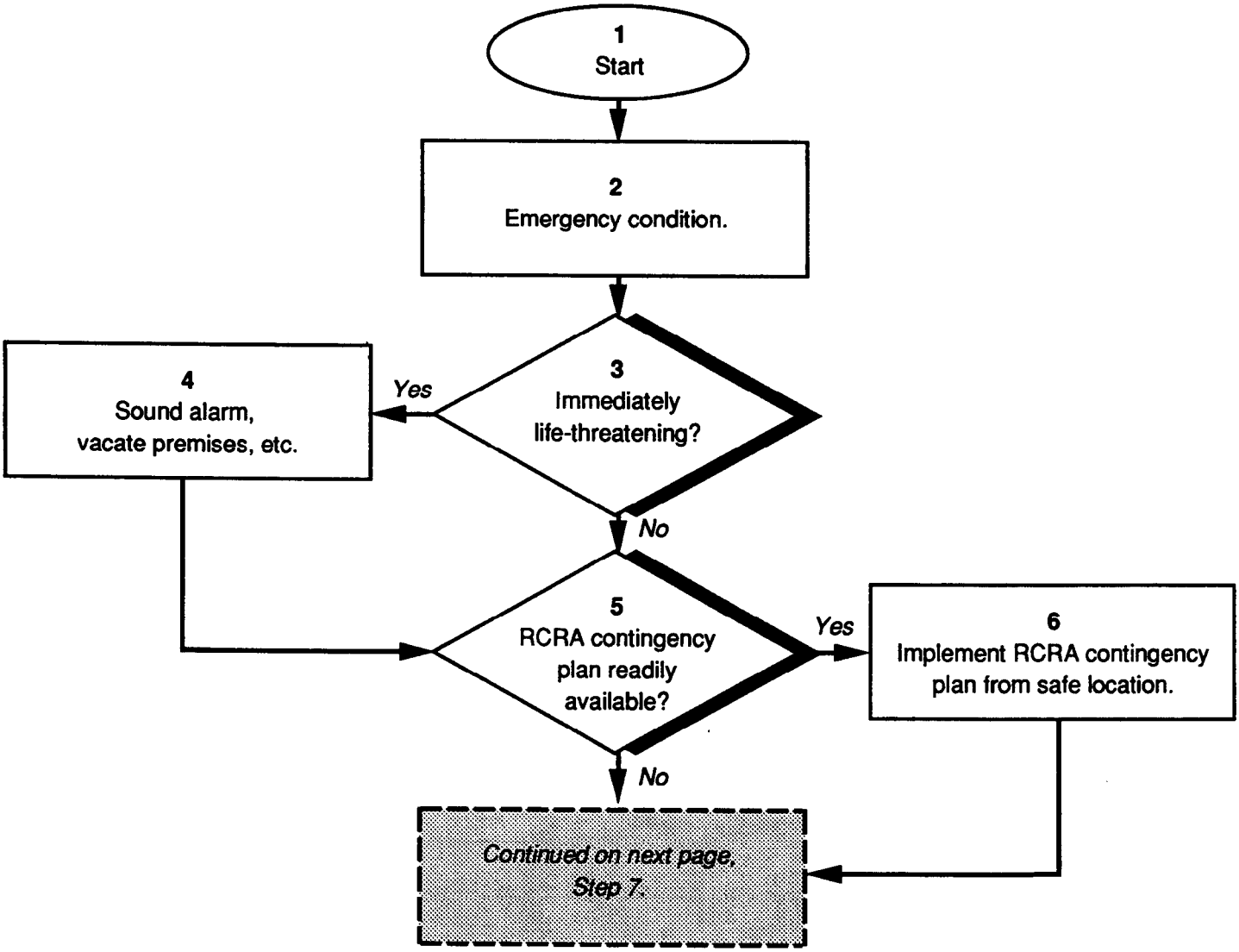
- Exposure pathway (e.g., air fire/explosion, groundwater, surface water, direct contact, ingestion);
- Location and demographics of the populations potentially at risk from exposure (e.g., residential areas, schools, drinking water supplies, sole source aquifer near vital ecology or protected natural resource; potential effects of human exposure (short- and long-term);
- Confirmed human exposure; and
- Effects of response delay.

Step 4

The potential environmental exposure and threats need to be evaluated. The factors to be considered include:

- The media that have been or may be contaminated (e.g., groundwater, air, surface water);
- Short-term and long-term effects on the environment resulting from the release;
- Possible natural resource and environmental effects (terrestrial; aquatic organisms; aquifers whether or not used for drinking water purposes);
- Known or projected ecological effects;
- Projected long-term effects;
- Effects of long-term delay; and
- How any interim measure will contribute to the final remedy at the facility.

Submodule 2-1-2: Emergency Interim Measures



Submodule 2-1-2: Emergency Interim Measures

Step 1 **Start.**

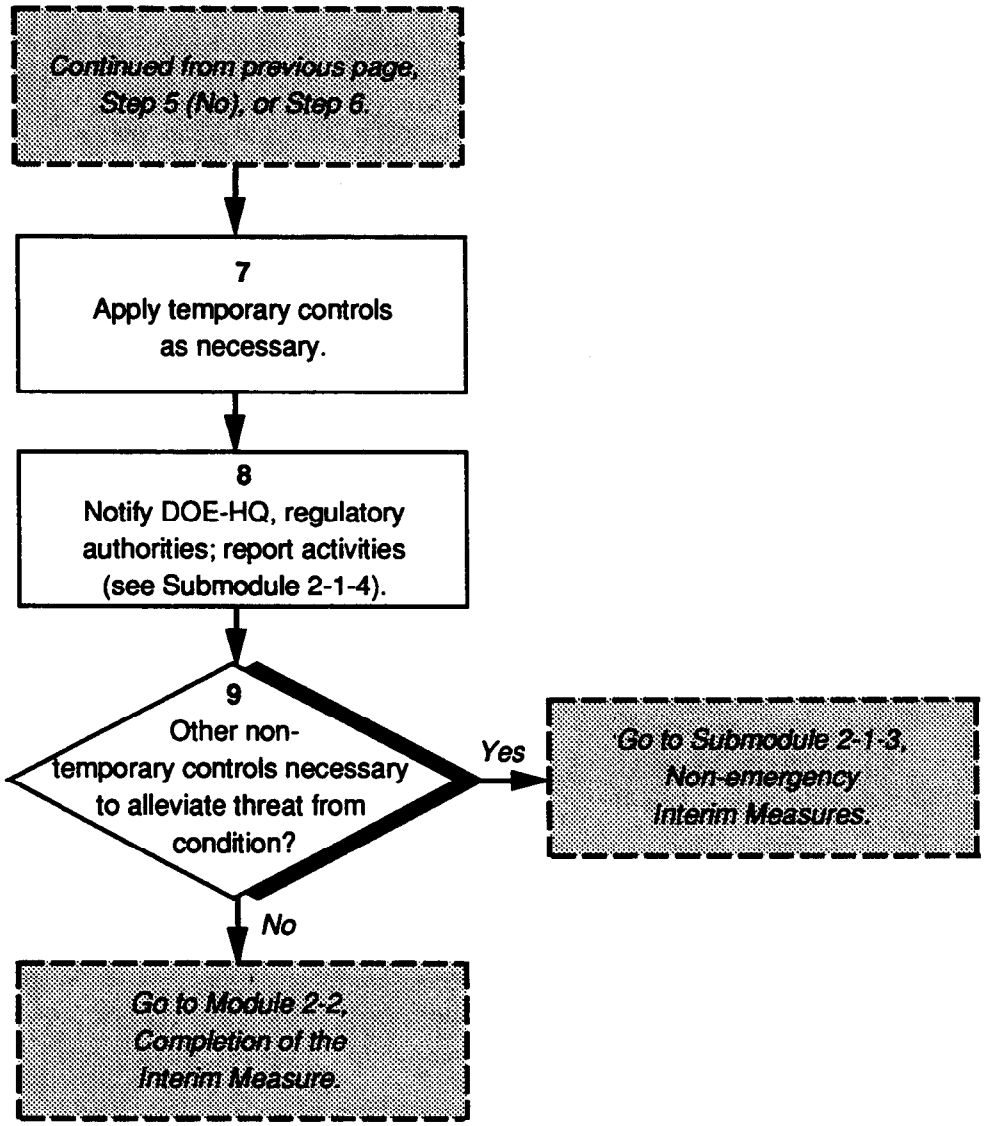
Step 2 An emergency condition is a situation that requires immediate action due to present or imminent threat to human health and the environment posed by a release or potential release of a hazardous waste or hazardous waste constituent from a solid waste management unit (SWMU). Unlike non-emergency interim measures, there will generally be no time to develop a work plan because of the unforeseen nature of this condition.
[Updated 9/99: Note: Please see RCRA Section 7003 and EPA's document, *Guidance on the use of Section 7003 of RCRA*.]

Step 3 Loss of human life is likely to occur from fires, explosions, and toxic gas emissions. Temperature threshold and gas monitors can indicate a life threatening condition, but personal observation of heat, flames, or fumes may indicate that an emergency situation exists.

Step 4 These conditions require physical separation from the immediate danger and warning others as soon as possible. Actions to prevent the release from occurring if possible, or to mitigate the effects of a release, should be evaluated against personal safety concerns.

Step 5 When loss of human life is not likely to occur, or when following alarm and evacuation procedures, if appropriate, the RCRA contingency plan should be located if readily available. The contingency plan is an action plan for emergency situations required under 40 CFR Part 264 Subpart D.

Step 6 If the RCRA contingency plan is readily available, it will specify the emergency coordinator who is responsible for directing response measures and how to contact them. Those who will be most instrumental in correcting the immediate problem should be contacted first, such as the fire department or emergency response teams. Other facility-specific procedures should be followed as specified in the contingency plan as long as personal safety is ensured. It should be noted that while the contingency plan may not provide specific directions for responding to emergencies related to all the SWMUs at a facility, it will contain general information (e.g., the name of the facility emergency coordinator, telephone numbers) valuable when conducting an emergency interim measure.

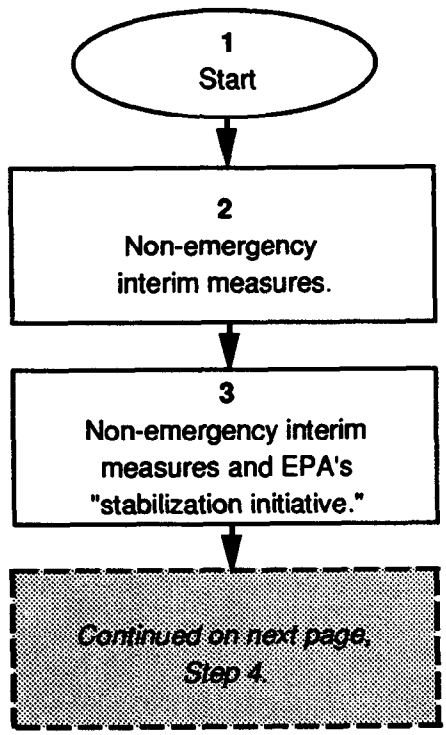

Continued from previous page, Step 5 (No), or Step 6.
7
Apply temporary controls as necessary.
8
Notify DOE-HQ, regulatory authorities; report activities (see Submodule 2-1-4).
9
Other non-temporary controls necessary to alleviate threat from condition?
Yes
Go to Submodule 2-1-3, Non-emergency Interim Measures.
No
Go to Module 2-2, Completion of the Interim Measure.

Step 7 Temporary or interim controls may then be used to mitigate the emergency. Examples for immediately life threatening conditions include having the fire department extinguish a fire, or locking or blocking off an area that has toxic fumes. For conditions that are not immediately life threatening, examples of temporary controls include blotting spills from leaking drums to keep drains from receiving wastes, repairing breached containment structures, or stopping machines or processes that may exacerbate the problem. All such temporary measures must be taken in strict compliance with health and safety procedures. Any controls used should, to the extent possible, contribute to the implementation of a corrective measure at the unit.

Step 8 Notification of the appropriate DOE and regulatory agency officials should occur as soon as possible. Although the authorized regulatory agency should be notified as soon as possible regarding the emergency condition and temporary controls to be applied, it may not be possible to provide this notification until after the fact. A follow-up report should be submitted as soon as possible and should include the conditions that caused the emergency, what was done to mitigate any release, what the present condition is, and additional steps that have been, or are being taken, to prevent recurrence of the emergency conditions. Recommendations for possible further action should be included.

Step 9 The emergency may have brought to light other problems, or may have caused releases and resulting environmental or other damage. These problems may require other non-emergency interim measures and/or long-term (non-emergency) corrective measures.

Submodule 2-1-3: Non-emergency Interim Measures



Submodule 2-1-3: Non-emergency Interim Measures

Step 1 Start.

Step 2

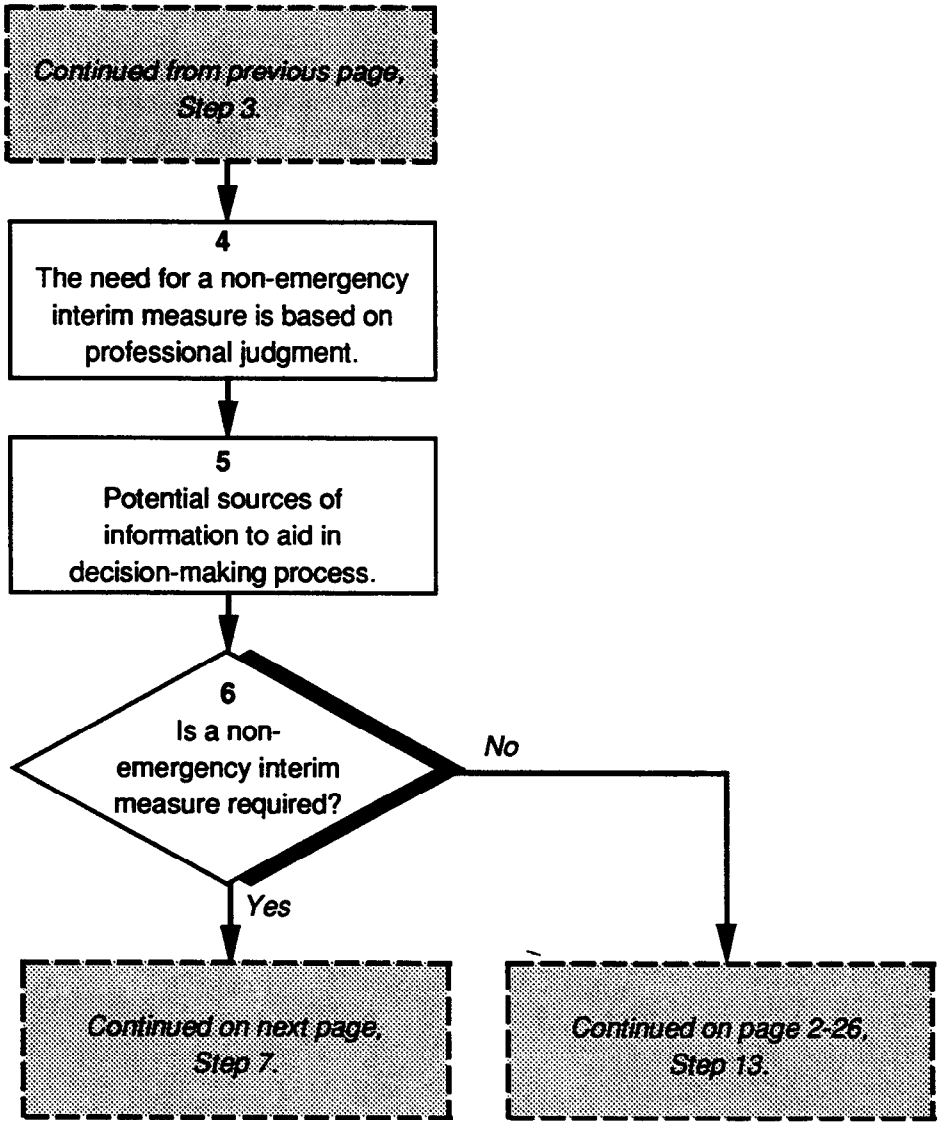
Non-emergency interim measures are used in those situations that do not require immediate action but will likely require action within a time frame prior to the implementation of the longer term corrective measures. A key consideration when assessing the need for a non-emergency interim measure is to ensure that the action will, to the extent possible, contribute to any final corrective measure selected for the unit.

Step 3

The use of non-emergency interim measures to achieve near- and mid-term solutions to releases of hazardous wastes or hazardous waste constituents from SWMUs is the basis of EPA's "stabilization initiative." As stated in the October 25, 1991, EPA memorandum from Sylvia Lowrance and Bruce Diamond to the EPA Regional Waste Management Division Directors (a copy is provided at the end of this chapter):

> *The overall goal of stabilization is to, as situations warrant, control or abate threats to human health and/or the environment from releases at RCRA facilities, and/or to prevent or minimize the further spread of contamination while long-term remedies are pursued.… Interim measures are the corrective action activities used to achieve the goal of stabilization.…*

The "stabilization initiative" stems from a suggestion made in the EPA document *The Nation's Hazardous Waste Management Program at a Crossroads: The RCRA Implementation Study* (1990). This recommendation was that EPA's Corrective Action Program should readjust its program emphasis to focus on use of interim measures to achieve near-term environmental results at facilities with the most serious problems. In particular, EPA believes that while "stabilization" will not be appropriate in all circumstances, there should be a (to quote the above-mentioned EPA memorandum) "bias" toward implementing interim measures to quickly address actual exposures or minimize the spread of contamination.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4
The need for a non-emergency interim measure is based on professional judgment.
5
Potential sources of information to aid in decision-making process.
6
Is a non-emergency interim measure required?
No
Yes
Continued on next page, Step 7.
Continued on page 2-26, Step 13.

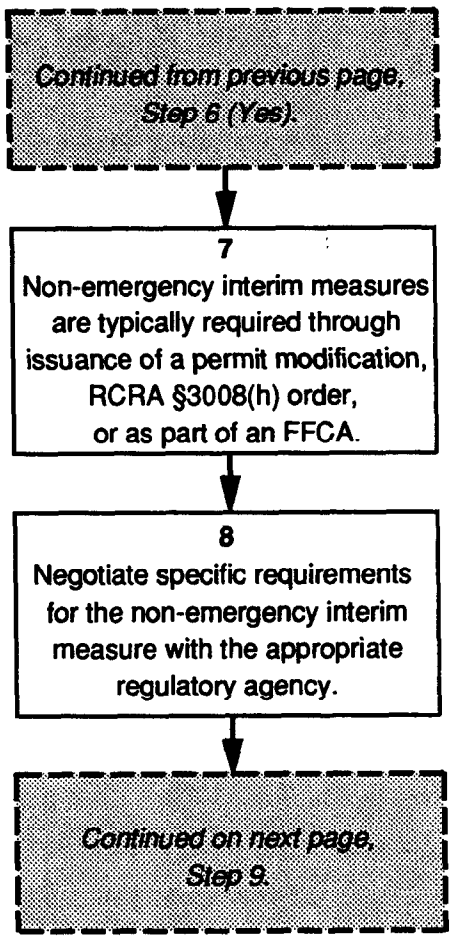
Step 4 The need for a non-emergency interim measure is largely a matter of professional judgment. For example, in a situation where action is required in order to prevent a release from migrating offsite, a non-emergency interim measure would be required if information indicated that offsite migration could occur in a period of several weeks up to (potentially) as long as 2 to 3 years. Alternatively, it would be more appropriate to complete the RFI and CMS, and then implement a long-term corrective measure if information indicated that the delay would not increase the risk posed to human health or the environment or if offsite migration would not occur prior to implementation of the final corrective measure.

As another example, if funding is available immediately but might not be available later in the corrective action process, it could be appropriate to implement a non-emergency interim measure rather than wait for selection of the long-term corrective measure. Also, if the facility has been experiencing public scrutiny, a non-emergency interim measure may help to allay the public's concerns about the consequences of delays in the corrective action process.

Step 5 Some sources of information that may help determine if there is a need for a non-emergency interim measure include:

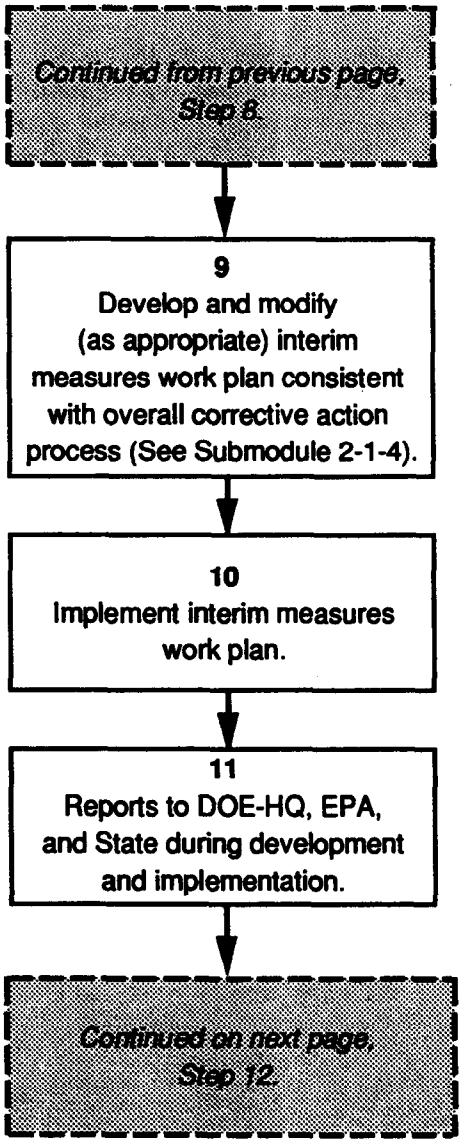
- Facility environmental audit or inspection reports (e.g., "Tiger Team" reports, "self-assessment" reports);
- RCRA Facility Assessment (RFA) report;
- RCRA Facility Investigation (RFI) report;
- RCRA Part A and Part B permit applications;
- Notice of significant increase;
- Responses to RCRA §3007 information requests;
- Information obtained through RCRA §3013 orders;
- Notifications required by CERCLA §103 or RCRA §3016 submittals;
- Information-gathering activities conducted under CERCLA §104; or
- Information from the general public that has been corroborated.

Step 6 DOE-HQ and the regulatory agency may have already been aware of the need for non-emergency interim measures as a result of the reporting process, other assessments, or after an emergency interim measure was implemented. One of the requirements of notification that an emergency interim measure is needed is to determine the need for a non-emergency interim measure. Generally, DOE would be informed by the regulatory agency of the need for a non-emergency interim measure through a permit modification or a RCRA 3008(h) corrective action order (following the RFA, for example). In other cases, DOE may become aware of a situation that could require non-emergency interim measures, and in this case should notify the authorized regulatory agency of the situation. If a non-emergency interim measure is required, go to Step 7. If not, go to Step 13.


Continued from previous page, Step 6 (Yes).
7
Non-emergency interim measures are typically required through issuance of a permit modification, RCRA §3008(h) order, or as part of an FFCA.
8
Negotiate specific requirements for the non-emergency interim measure with the appropriate regulatory agency.
Continued on next page, Step 9.

Step 7 The non-emergency interim measure, if required, will be identified in the facility's RCRA permit, in a 3008(h) corrective action order, or may be specified in a FFCA or IAG. If there is an emergency situation, or if the conditions at the facility require immediate response, DOE should act expeditiously to implement any measures necessary to protect human health and the environment, even if prior EPA approval has not been secured. For non-emergency interim measures DOE should consider seeking approval of the EPA Regional Administrator prior to implementing the measure as a means of preventing disputes from arising.

Step 8 Informal negotiation or discussion between the facility, DOE-HQ, and the regulatory agency should result in a consensus on the need for or type of interim measure required. This discussion usually occurs following the performance of the RCRA Facility Assessment and prior to the drafting of a formal RCRA permit or corrective action (RCRA §3008(h)) order (or FFCA) that would require interim measures. Resulting requirements for non-emergency interim measures will be outlined in the draft permit or corrective action order, and should be negotiated prior to dissemination for public review and comment. Prior knowledge of impending requirements is also essential for ensuring that adequate funds are in place to implement interim measures. Although DOE would have the opportunity to comment on the draft permit or order once issued, it would be best to work with EPA in developing mutually acceptable requirements.


Continued from previous page, Step 8.
9
Develop and modify (as appropriate) interim measures work plan consistent with overall corrective action process (See Submodule 2-1-4).
10
Implement interim measures work plan.
11
Reports to DOE-HQ, EPA, and State during development and implementation.
Continued on next page, Step 12.

Step 9 The final RCRA permit or order (or FFCA) will require the development of a detailed work plan for the implementation of the interim measure. Since the regulatory agency needs to approve the plan, soliciting informal input from the regulatory agency will help facilitate the work plan development process. The work plan should include the following at a minimum:

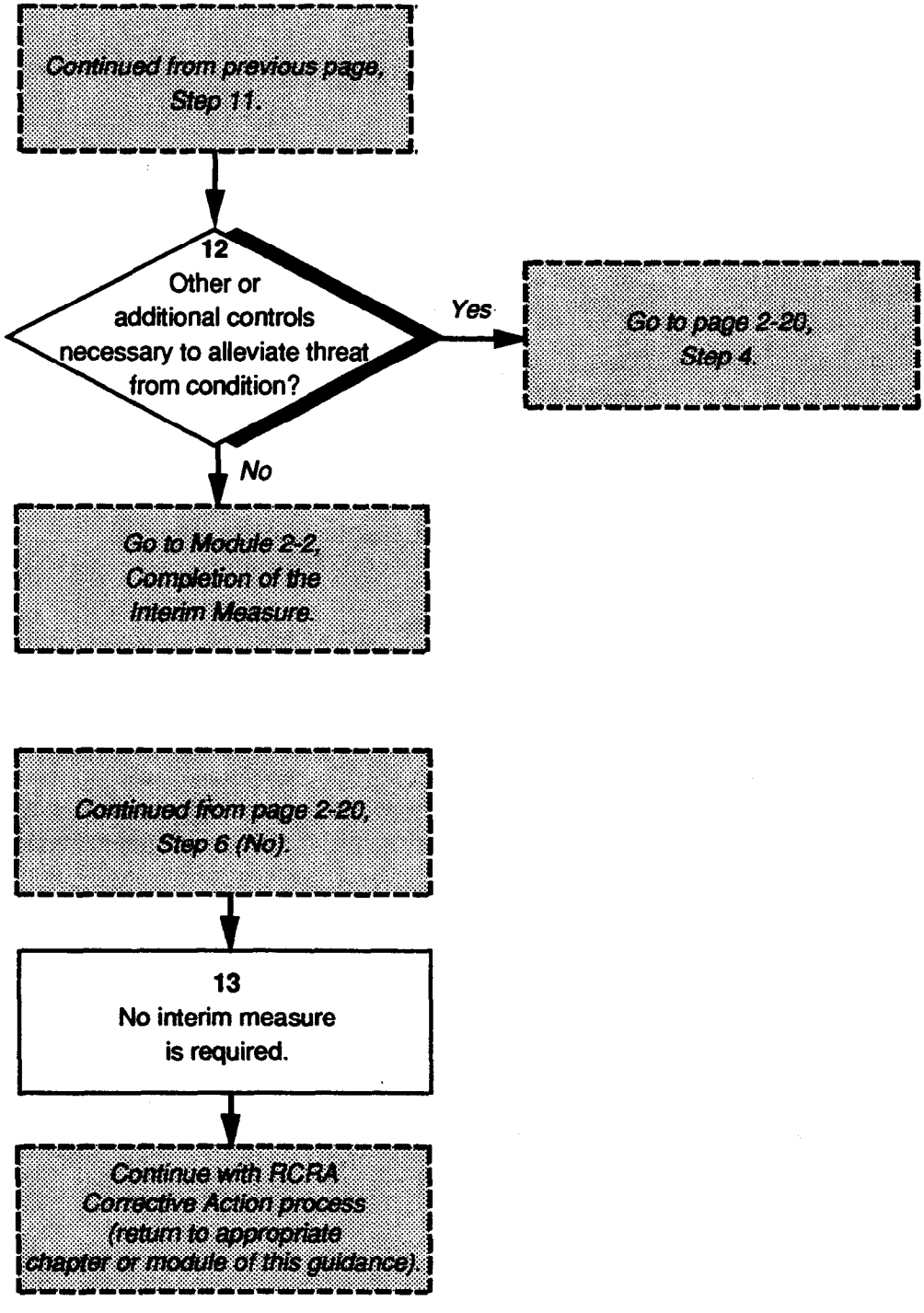
- Interim measures objectives;
- Health and safety plan; and
- Public involvement plan.

As appropriate, the interim measures work plan may also include the following:

- Interim measures investigation program;
  - Data collection quality assurance plan,
  - Data management plan,
- Interim measures design program;
  - Design plans and specifications,
  - Operation and maintenance plan,
  - Project schedule,
  - Final design documents,
- Interim measures construction quality assurance plan;
  - Construction quality assurance objectives,
  - Inspection activities,
  - Sampling requirements,
  - Documentation.

Step 10 DOE would then follow the work plan as approved, but where actual conditions vary it may be necessary to make revisions. DOE-HQ and the regulatory agency should be involved in any revisions, and some may require official approval. Revisions with regulatory implications might need EPA (or State) approval, whereas revisions with policy implications might need regulatory agency and/or DOE-HQ approval.

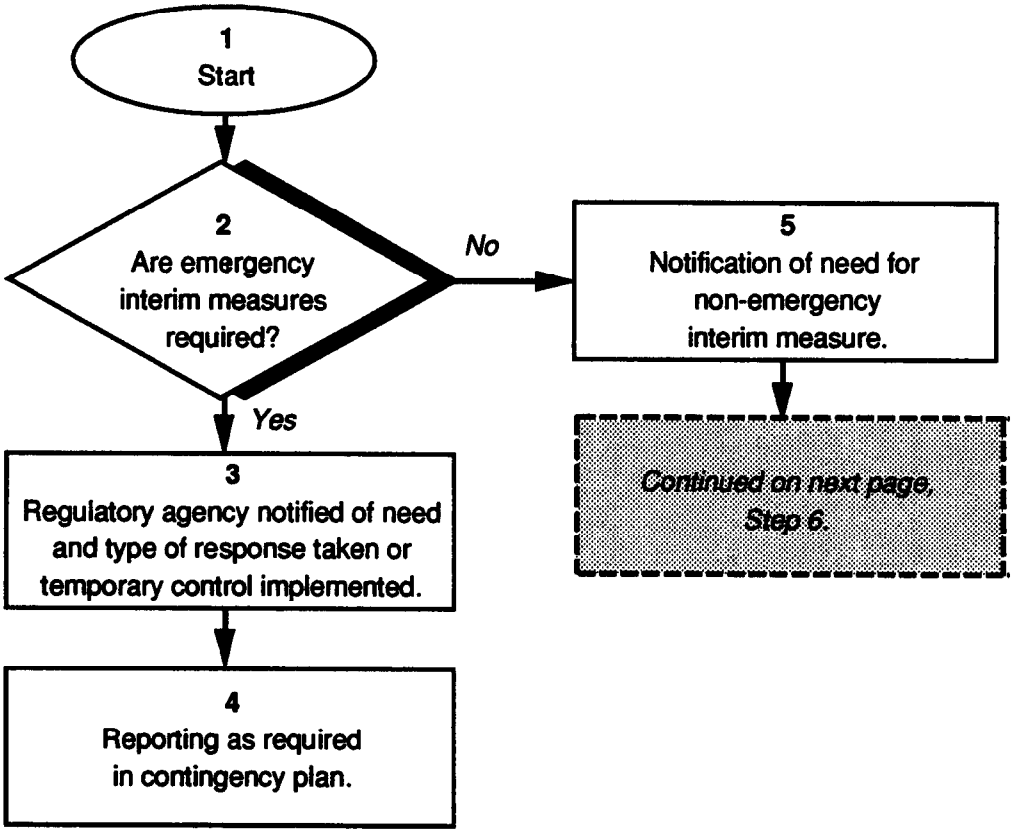
Step 11 Whether revisions to the work plan are needed or not, every action during the development and implementation of the interim measure should be reported to the authorized regulatory agency involved. Official reports submitted to the regulatory agency become public information (to the extent that confidential business or national security information is not involved) so sufficient detail to fully characterize the interim measure process is essential. Generally, the RCRA permit, Order, or FFCA will specify reporting requirements. These will consist of interim progress reports (e.g., monthly) as well as a final report, and may also involve certification (e.g., by an independent qualified party) that interim measures have been completed as required.


Continued from previous page, Step 11.
12
Other or additional controls necessary to alleviate threat from condition?
Yes
Go to page 2-20, Step 4.
No
Go to Module 2-2, Completion of the Interim Measure.
Continued from page 2-20, Step 6 (No).
13
No interim measure is required.
Continue with RCRA Corrective Action process (return to appropriate chapter or module of this guidance).

Step 12 If, as a result of implementing the interim measure, there appears to be a need for additional interim measures, then the process begins again with notification of DOE-HQ and regulatory authorities. If no additional interim measures are needed, then the interim measures process needs to be completed as described in Module 2-2.

Step 13 As a result of analyzing the site conditions, the regulatory agency may ultimately decide that no interim measure is needed at this time. This may be due to rethinking of a perceived problem or recategorization of a non-emergency condition to be addressed as part of the long-term corrective measures.

Submodule 2-1-4: Interim Measures Evaluation and Approval Process



Submodule 2-1-4: Interim Measures Evaluation and Approval Process

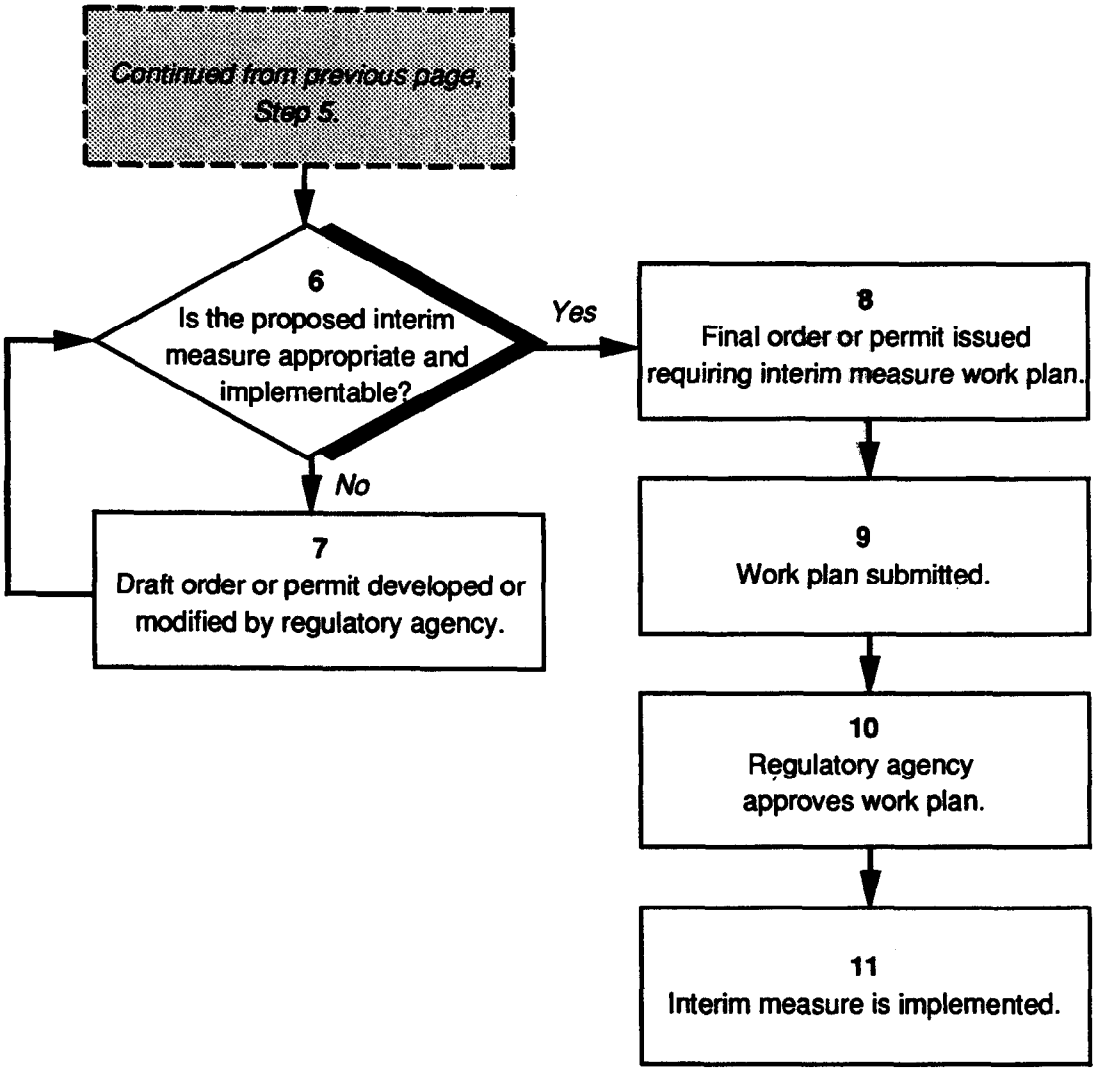
Step 1 **Start.**

Step 2 [Updated 9/99: It should be noted that if there is evidence of conditions posing an imminent and substantial endangerment to health or the environment, EPA may choose to issue an order to abate those conditions as quickly as possible under the imminent hazard provisions of Sect. 7003 of RCRA instead of Sects. 3004(u), 3004(v), or 3008(h).] Emergency interim measures are perceived to be a temporary control taken to correct a situation that poses an immediate potential or actual threat to human health or the environment. No time would have been available to obtain prior approval or to develop a work plan before taking action. If a contingency plan was available, it would have been implemented before or after the temporary control, depending on the immediacy and magnitude of the threat. It should be noted that the contingency plan may not address some perceived interim measures such as discovery of a routine or systematic release, but the plan will provide valuable information (e.g., the name of the facility emergency coordinator) useful in conducting emergency interim measures.

Step 3 Notification of all details regarding the action taken should be made to the regulatory agency as soon as possible following the incident. Non- emergency interim measures that may be needed as a result of the emergency condition (in addition to any temporary controls) should be proposed at this time.

Step 4 Actions taken and results accomplished should be documented. Due to the nature of emergency interim measures, no evaluation or prior approval by regulatory agencies can usually be sought.

Step 5 As indicated in Submodule 2-1-2, the regulatory agency will generally determine the need for interim measures as a result of the RFA (although interim measures may be identified at any time during the corrective action process). The regulatory agency will generally notify the facility that interim measures seem appropriate, and the nature of such measures. During the time that the regulatory agency is developing the permit modification or order, DOE should offer comments and assistance to the regulatory agency. This action may help to ensure that requirements to be outlined in the order or permit will be acceptable and appropriate. Acceptability should be evaluated in terms of efficiency and effectiveness, compatibility with any long-term corrective measures that may be anticipated, and funding constraints.


Continued from previous page, Step 5.
6
Is the proposed interim measure appropriate and implementable?
Yes
No
7
Draft order or permit developed or modified by regulatory agency.
8
Final order or permit issued requiring interim measure work plan.
9
Work plan submitted.
10
Regulatory agency approves work plan.
11
Interim measure is implemented.

Step 6 Formal notification that non-emergency interim measures are required will be provided in the facility's RCRA permit, a RCRA §3008(h) corrective action order, or FFCA or IAG. The notification will become a public document and, in some cases, the public may be granted an opportunity to comment on the requirements for the interim measure.

Step 7 After the proposed interim measure has been drafted and comments are solicited by the regulatory agency, DOE should evaluate whether formal comments should be submitted. Factors to be considered are the same as those discussed above, and include the efficiency and effectiveness of the interim measure, whether it will be commensurate with long-term corrective measures, and what funds will be available to implement it.

If an inappropriate interim measure is required, the facility should prepare a detailed discussion of their concerns and submitted these concerns in writing to the EPA Regional Administrator.

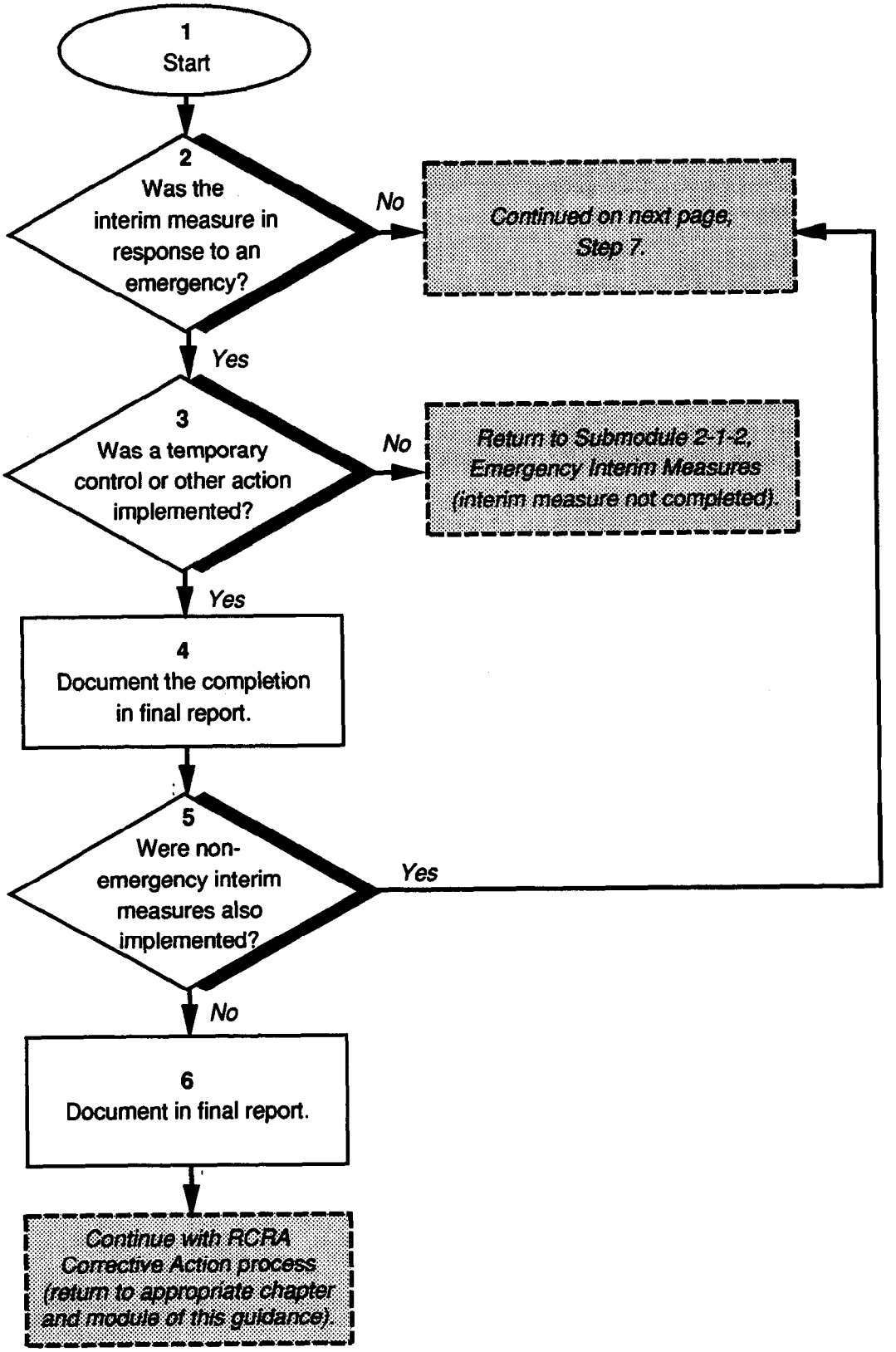
Step 8 Following review of the permit or order by DOE, any public comment period that was required, and any negotiations that have ensued, the authorized regulatory agency may need to revise the proposed interim measure requirements. If no revisions are required, the facility will begin development of a detailed work plan.

Step 9 Development of the draft work plan will address the components identified in Submodule 2-1-3, Step 9. The draft work plan (if required) is then submitted to the regulatory agency for review and comment. If revisions are required, a revised work plan that addresses the comments will need to be developed.

Step 10 The final work plan is likely to be approved quickly because, it is to be hoped, the regulatory agency and DOE will be in agreement over the specific requirements.

Step 11 When approval is received by DOE, the interim measure must be initiated pursuant to the work plan. Progress reports will be submitted to the regulatory agency during and at the completion of implementation.

Module 2-2: Completion of the Interim Measure



Module 2-2: Completion of the Interim Measure

Step 1 **Start.**

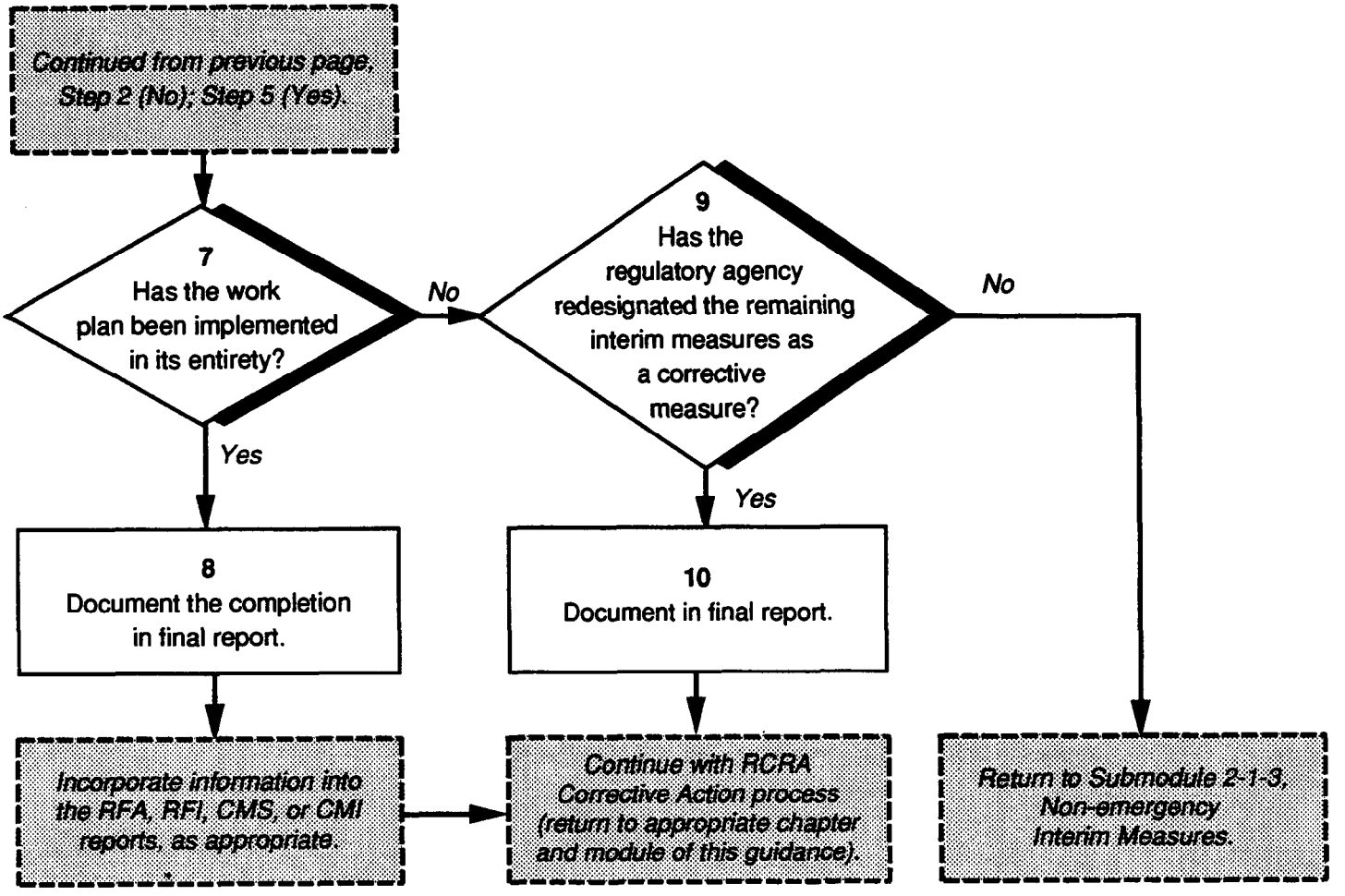
Step 2 If a response was made as the result of an emergency, there would have been no time to obtain prior approval or develop a work plan. Such a response could have been the sounding of an alarm because of a fire, for example. In a non-emergency situation, a work plan would have been developed and approved by the regulatory agency before any response was made, as required in a permit or corrective action order.

Step 3 If a temporary control or other action was not implemented, the interim measure was not completed. An example of a completed interim measure would be construction of a berm to prevent migration of a threatened release of liquids that contain hazardous wastes or hazardous waste constituents.

Step 4 When the temporary control is implemented, the interim measure is complete. This is documented in a final report to the regulatory agency and DOE-HQ.

Step 5 As a result of the completion of the emergency interim measure, the need for non-emergency interim measures may also have been identified, and (after work plan approval) implementation begun.

Step 6 If the need for non-emergency interim measures was not identified, this is also reported in the final report to the regulatory agency and the appropriate DOE officials.


Continued from previous page, Step 2 (No); Step 5 (Yes).
7
Has the work plan been implemented in its entirety?
No
9
Has the regulatory agency redesignated the remaining interim measures as a corrective measure?
No
Yes
Yes
8
Document the completion in final report.
10
Document in final report.
Incorporate information into the RFA, RFI, CMS, or CMI reports, as appropriate.
Continue with RCRA Corrective Action process (return to appropriate chapter and module of this guidance).
Return to Submodule 2-1-3, Non-emergency Interim Measures.

Step 7 For non-emergency interim measures to be complete, the final work plan (and any modifications) as approved by the regulatory agency must be fully implemented. For example, if an objective in an interim measure work plan was to reduce a detected constituent in surface water to a specific concentration, and monitoring following implementation of the interim measure revealed that the concentration was too high, then the interim measures work plan requirements would not have been completely implemented.

Step 8 When the work plan has been fully implemented, the interim measure is complete. This is documented in a final report to the regulatory agency and DOE-HQ. The permit or order may also require certification by an independent qualified technical engineer.

Step 9 If the interim measures work plan has not been fully implemented, the regulatory agency may redesignate the remaining interim measure implementation to the corrective action process because corrective measures implementation has begun or will soon begin. Since the interim measures work plan was developed to be consistent with the overall corrective action process, the conversion from interim measure to long-term corrective measure should be uncomplicated. If the regulatory agency has not redesignated the remaining interim measure implementation, then the interim measure process is not complete and must continue according to the work plan.

Step 10 If the remaining interim measure implementation has been redesignated to the RCRA Corrective Action process, this information is documented in a final report to the regulatory agency and the appropriate DOE officials.

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Module 2-3: EPA Memorandum on "Stabilization"

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MEMORANDUM

SUBJECT: Managing the Corrective Action Program for Environmental Results: The RCRA Facility Stabilization Effort

FROM: Sylvia K. Lowrance, Director
Office of Solid Waste

Bruce Diamond, Director
Office of Waste Programs Enforcement

TO: Regions I-X RCRA Waste Management Division Directors

The purpose of this memo is two-fold. First, we are transmitting to you some important guidance documents that have been developed to ease the implementation of the RCRA facility stabilization effort. Second, and perhaps more importantly, we wanted to take this opportunity to ask for your help and personal involvement in making the stabilization effort a reality. Fully embracing this effort means adjusting our Program's philosophy by placing increased emphasis on taking actions at many facilities to prevent situations from getting worse. We need your help in transmitting this message down through the ranks and in identifying and overcoming obstacles to success.

When the RCRA Implementation Study (RIS) was issued in July, 1990, it suggested that the RCRA Corrective Action Program needed to adjust its longtime program emphasis. In essence, the RIS recommended that we adopt as our program strategy more frequent use of interim actions to achieve near term environmental results at facilities with the most serious problems. While final cleanup is still the long term goal for the corrective action program, this strategy emphasizes the importance of controlling releases and stabilizing sites to prevent the further spread of contamination as the first phase of corrective action. Stabilization of RCRA facilities means that we take whatever action is necessary at as many facilities as possible to address actual exposures (imminent risks) and to prevent the further spread of contamination. Although we recognize that stabilization actions will not always be appropriate or possible, we should demonstrate a "bias" for stabilization actions in the way we manage corrective action at RCRA facilities. We need your full support and dedication to this effort for it to be successful.

Over the course of the past year, Headquarters and the Regions have worked hard to take this recommendation and pave the road to implementation. The FY92 RCRA Implementation Plan (RIP) identifies stabilization activities as an area of national program emphasis and outlines the STARS measures associated with evaluating facilities for stabilization actions, and with implementing those measures. Further, this memo includes as attachments several guidance documents and a proposed checklist for completing stabilization actions. We hope that you will find this guidance, which was developed with a great deal of regional involvement, helpful as you begin implementing this important initiative.

Thank you for your efforts and your continuing support.

Attachments

RCRA STABILIZATION STRATEGY

Goals

One of the major recommendations of the RCRA Implementation Study (RIS) calls for the RCRA Corrective Action Program to adopt as a program management goal the "stabilization" of RCRA facilities as soon as possible. Over the next several years, the Agency and the States will begin implementing a major initiative to achieve this goal. This strategy paper is intended to:

- Explain the concept of facility stabilization; and
- Discuss the basic data needs to make decisions concerning facility stabilization and future guidance development in this area.

The overall goal of stabilization is to, as situations warrant, control or abate threats to human health and/or the environment from releases at RCRA facilities, and/or to prevent or minimize the further spread of contamination while long-term remedies are pursued.

Implementing the stabilization strategy will yield substantial benefits for the corrective action program. Focusing resources in the near term on stabilizing environmental problems, rather than pursuing final, comprehensive remedies at all facilities, should enable the Agency and States to control the most serious environmental problems at a larger number of facilities, more quickly. Furthermore, by imposing such expeditious controls, the extent and incidence of continued environmental degradation from existing releases should be significantly reduced. However, if a stabilization measure is found to be inconsistent with the final remedy or the waste or site conditions, it should be modified or not be imposed.

Process

To a large extent, this stabilization effort builds on work that has been ongoing in EPA Regions and States. Although stabilization is a new RCRA strategy, it will not create a new regulatory or administrative process. Stabilization measures will be implemented through the existing process described in the proposed RCRA Corrective Action rule, and in the EPA guidance document on interim measures. Interim measures are the corrective action activities used to achieve the goal of stabilization. Regions have already required a large number of facility owners/operators to undertake interim measures to address obvious environmental problems, particularly where actual or imminent exposure of human or environmental populations has been identified. Interim measures, as discussed in the proposed corrective action rule and in the EPA guidance document on interim measures, may be conducted at a facility whenever the Agency determines that a release, or threat of a release, poses a threat to human health or the environment. These releases may be actual, imminent, or potential, and pose a threat to such receptors as human populations, animals, ecosystems, and/or drinking water.

Along with interim measures, other RCRA remedial approaches (e.g., conditional remedies and voluntary actions by owner/operators) will also be used to achieve stabilization. These remedial approaches are intended to phase-in over time and, therefore, may include stabilization activities to control the migration of wastes onsite and to expedite cleanup or releases that have migrated beyond the facility boundary. Voluntary corrective actions may be conducted at RCRA facilities that wish to initiate stabilization activities rather than wait for EPA to begin actively pursuing corrective action at the facility. Voluntary activities, however, do not release owners/operators from RCRA liability or exempt them from future Agency action, if necessary.

While this stabilization effort builds upon ongoing activities, the significant change is that the national program is adopting the philosophy that overall there are increased environmental benefits associated with taking stabilization actions at more facilities in the near to mid-term, prior to pursuing final, comprehensive remedies at most facilities. However, RCRA Facility Investigation (RFIs) will continue, albeit at a slower pace, at many facilities since they are necessary for the ultimate cleanup of a facility.

By implementing stabilization measures at a facility, the Agency may be able to limit active oversight of the facility while addressing other high priority facilities; in other circumstances stabilization could simply be a milestone within a continuing remediation process. There may also be cases where a stabilization measure could be technically effective enough to serve as a final remedy for a particular release (e.g., when stabilization achieves final clean-up levels). Consideration of the stabilization measure as a final remedy would be based upon evaluation of performance monitoring data collected after the measure was implemented. In addition, public participation should be a part of any stabilization action that is viewed as the potential final remedy for the facility.

Procedurally, it is expected that stabilization will typically involve an evaluation of RCRA Facility Assessment (RFA) information to identify the need for stabilization techniques. Subsequent information gathering during the RFI should be focused to support technical decisions regarding the stabilization approach chosen, and implementing the technical "fix." Although public participation should be a part of a stabilization action that serves as the final remedy, interim measures that are part of a permit or order do not necessarily have to be public noticed at the time the measure is implemented.

The initiation of the stabilization "process" will be primarily a function of the overall priority of the facility, as determined by the national corrective action prioritization protocol. The Agency will assign the highest priority to those facilities that are determined to pose actual or imminent exposure threats to human populations or environmental receptors. Regions and States can also impose stabilization measures at middle and low priority facilities after appropriate actions have been taken to stabilize releases at high priority facilities.

Technical Considerations

Stabilization is a new program philosophy and should not be confused with measures that were historically considered stabilization technologies. Many of the stabilization technologies had the goals of immobilizing wastes and included solidification, vitrification, and other immobilization techniques. Although these technologies may be effective as stabilization measures in certain situations, this effort is broader and includes other source control measures along with measures that will mitigate the further spread of contamination. Measures to stabilize releases or other environmental problems could include the installation of a large-scale pump and treat system combined with treatment and/or containment-based source control actions. In addition, exposure controls, such as fences, other access controls, or provision of alternative water supplies, may also be required to mitigate actual or imminent exposure to health threats.

Stabilization may be appropriate for a facility under any of the following conditions:

- There are releases at the facility which pose actual or imminent exposure threats to humans or ecosystems at levels of concern;

- There are releases that, if not addressed expeditiously, will result in further significant contamination of environmental media in the near to mid-term (e.g., 5-10 years); or

- The site characteristics suggest that the site may be amenable to measures designed to control or abate imminent threats or prevent or minimize the further spread of contamination.

Information needed to answer these questions may be available after the RFA has been completed, especially data on imminent threats. However, in many situations data on the fate and transport of hazardous waste constituents will not be available until the RFI is underway or completed. Given that the selection of an appropriate stabilization measure is dependent upon the collection of sufficient site/unit characterization data, the Agency suggests that data needed to make decisions on stabilization be gathered up-front in the RFI process. Figure 1 briefly outlines some key decision points for selecting stabilization measures.

Stabilization measures should be applied to address releases to all environmental media. Technical limitations of remedial efforts (such as restoring contaminated ground water to drinking water quality), and lack of detailed information on contaminants and releases (such as with air releases), further underline the need to focus remedial efforts on preventing the further spread of existing contamination problems, as well as preventing new contamination from occurring.

The timing, process, and technical approach to stabilizing facilities will vary widely, and will be highly [dependent] on a variety of site-specific factors. These factors could include:

- Environmental significance (i.e., priority) of the facility;

- Immediacy of exposure threats;
- Types of contaminants and volumes of releases;
- Technical complexity of remediation;
- Site hydrology, or other media-specific characteristics; and

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decisions for stabilization will also vary greatly. Obvious removal-type situations might often be done more or less immediately, without extensive studies; while ground-water contamination in a complex hydrogeologic setting could require extensive investigations before an effective stabilization remedy could be chosen.

The Office of Solid Waste and Emergency Response (OSWER) is developing guidance that specifies the types of environmental problems which should be the focus of stabilization actions. The guidance will specify technical approaches to accelerate data-gathering to support decisions on appropriate stabilization measures, and describe phasing the RFI process to gather the necessary data to make decisions regarding stabilization. Draft guidance should be available in the fall, 1991.

The OSWER is also working closely with the Office of Research and Development, Center for Environmental Research Information (ORD-CERI) to produce guidance on stabilization technologies and case studies of successful implementation of stabilization technologies. Several actual examples of stabilization technologies that have to be[en] implemented at RCRA facilities will be used as case studies for discussion the appropriateness of certain technologies. In addition, the technical guidance document will cover data needs, performance criteria, and environmental conditions. This document should also be available in the fall, 1991.

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OSWER Directive No. 9902.4
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